

Pressure &

Solutions

WWW.MKSINSTR.COM



e-Baratron®

627E / 628E / E27E / E28E

TEMPERATURE-CONTROLLED AND ETHERNET-ENABLED CAPACITANCE MANOMETER

The Ethernet-enabled e-Baratron® 627E and 628E capacitance manometers can now network with Ethernet hubs and other devices for local or network diagnostics without disassembly or removal from the host system. Like other MKS Ethernet-equipped products, the 62xE Series manometer includes embedded Internet browser software that allows it to communicate with any Windows®-based PC. Since the Ethernet port operates in parallel to the standard analog communications, the device can be diagnosed on a real-time basis during processing – a huge benefit for users who perform their own system analysis and troubleshooting. Even for users who do not use Ethernet networking, the 627E and 628E also have external LEDs to give a fast intuitive guide to the device's status. The 627E and 628E models use the MKS standard capacitance sensor, while the E27E and E28E models are equipped with the MKS patented Etch sensor that greatly reduces manometer drift in processes with condensable byproducts.

Features & Benefits

- Industry-leading accuracy and repeatability
- Standard product includes both analog and Ethernet communications for use in existing and latest generation of networked process tools
- Ethernet communications are real-time and can be run in parallel with analog communications, allowing in-situ diagnostics of device and process – no cable disconnection required
- Embedded Internet web browser communicates with any Windows-based PC
- Standard intuitive Graphical User Interface (GUI) with complete set of diagnostic routines that can be used for the device or the process
- Easy-to-understand external indicators for immediate device status information
- Full Scale pressure ranges from 1,000 Torr to 0.10 Torr
- Operating temperatures of 45°C or 100°C for use in difficult semiconductor, display manufacturing, and biopharmaceutical processes
- Available with either standard or etch sensors for use in most applications
- Pin-to-pin compatible with other heated analog Baratron® capacitance manometers and some competitive products



Heated to either 45°C or 100°C for use in a wide range of semiconductor manufacturing and other related processes, the e-Baratron capacitance manometer improves on its class-leading accuracy and repeatability – now to better than 0.10% of Reading for many configurations. Full Scale ranges from 1,000 Torr (19.3 psia) to 0.10 Torr (0.13 mbar) give the product the widest application range of any capacitance manometer, and its standard Inconel® sensor has exceptional resistance to corrosion from aggressive gases. The 627E and 628E are also available with the patented MKS particle sump that prevents condensable byproducts from difficult processes from depositing on the diaphragm and causing drift. Lastly, the 627E and 628E retain their proven analog communications, making it literally a “drop-in” retrofit into existing processing systems.

The embedded Graphical User Interface (GUI) is capable of very detailed analyses of both the e-Baratron capacitance manometer and the chamber that it is mounted on. Upon initially connecting a Windows PC, the user will see the Device Status screen (Figure 1), which gives a quick “at-a-glance” summary of the e-Baratron including the pressure, status, and general product information. The user can then move to the Plot screen (Figure 2) that shows a real-time plot of the actual pressure that the e-Baratron sees in the process chamber. This is a particularly powerful function that can be used for detailed process and system diagnostics. Since this mode can display transient pressure changes occurring as fast as 100 milliseconds, it can be used to troubleshoot and diagnose a wide variety of process system issues. Examples include improper isolation valve operation, pressure control instabilities, DC or RF power supply variations, process chemistry issues, and even vacuum pump operation. The e-Baratron manometer GUI also continuously tracks its own function in areas such as temperature, current draw, and microprocessor operation - and reports back to you via the GUI the problem and when it happened (Figure 3). That helps you to get the processing system back on-line and generating revenue faster. The PC must have Internet Explorer v6.0 or later with Java® RunTime Environment version 1.5 to 1.7. Java RunTime Environment may be downloaded from www.java.com.

Power, speed, and intelligence are all available in the 627E and 628E e-Baratron capacitance manometers. That is what you expect from the worldwide leader in capacitance manometers and that is what MKS gives you.

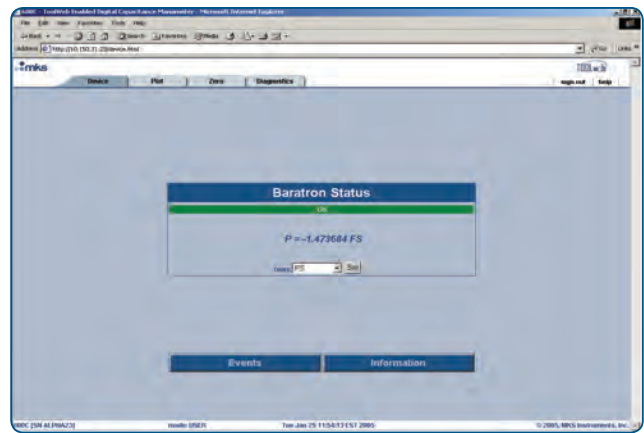


Figure 1 —
Status Page

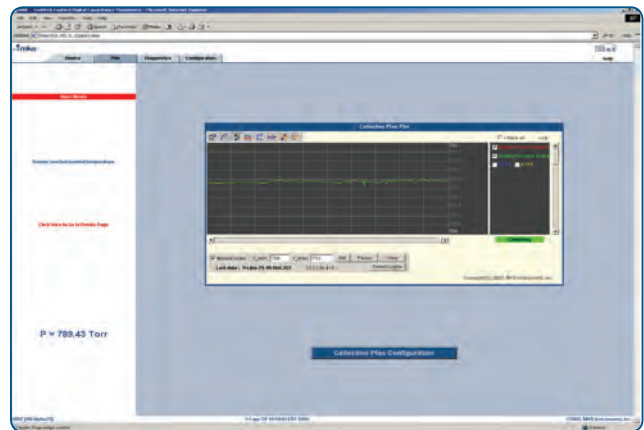


Figure 2 —
Plot Mode

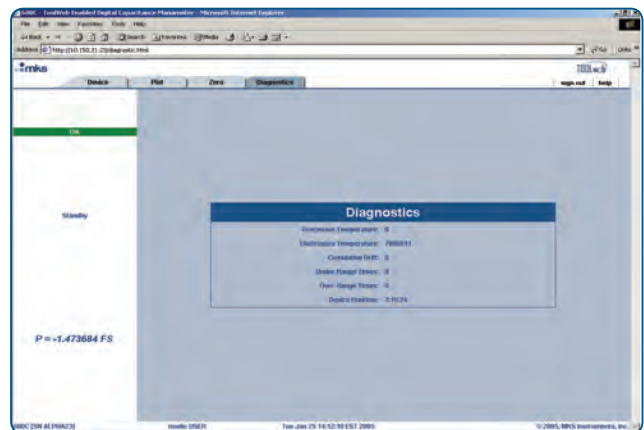


Figure 3 —
Diagnostics Mode



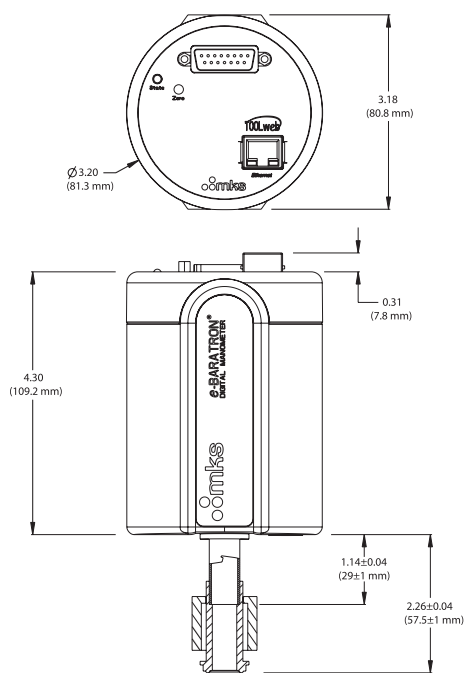
Specifications

| | |
|---|---|
| Full Scale Ranges | 0.1, 0.25, 1, 2, 10, 20, 100, 500, 1000 Torr |
| Resolution | 0.001% FS |
| Accuracy* | |
| 627E and E27E | 0.10% of Reading for ranges of 1 Torr or higher, 0.15% of Reading for 0.1 and 0.25 Torr ranges |
| 628E and E28E | 0.25% of Reading for ranges of 1 Torr or higher, 0.50% of Reading for 0.1 and 0.25 Torr ranges |
| Temperature Coefficients | |
| Zero | 0.002% FS/°C for all models of 1 Torr and higher; 0.005% FS/°C for 0.1 Torr range 627E, 0.01% FS/°C for 0.1 Torr range 628E |
| Span | 0.02% Reading/°C |
| Ambient Operating Temperature | |
| 45°C Models | 15 to 40°C |
| 100°C Models | 15 to 50°C |
| Volume | 6.3 cm ³ |
| Warmup Time | 2 hours for ranges of 1 Torr and higher; 4 hours for ranges below 1 Torr |
| Overpressure Limit | 45 psia (310 kPa) or 120% of Full Scale, whichever is higher |
| Materials Exposed to Process Gases | Inconel |
| Input Power Required | |
| 45°C Models | ±15VDC ± 5% or +24VDC ± 5% @ 300 mA |
| 100°C Models | 600 mA |
| Output Signal | |
| Analog | 0-10VDC into > 10 kΩ load |
| Digital | Ethernet |
| Electrical Connectors | |
| Analog | 9 or 15-pin D-subminiature |
| Digital | RJ45 receptacle |
| External Indicators | Multicolor status LED and two (2) green LEDs for Ethernet communications status |
| Compliance | CE, SEMI S2-93 |
| Fittings | |
| Standard | 0.50" (12 mm) OD tube |
| Optional | 8 VCR® male or female, 8 VCO® female, NW16-KF, NW25-KF, and 1.33" (33.8 mm) OD Conflat® |

*Includes non-linearity, hysteresis, and non-repeatability.



Ordering Information



TOLERANCES:
UNLESS SPECIFIED
XX = 0.02

Dimensional Drawing —

Note: Unless otherwise specified, dimensions are nominal values in inches (mm referenced).

Ordering Code Example: 628E11TGAC1B1

| | Code | Configuration |
|--|------|---------------|
| 627E, standard sensor, heated to 45°C | 627E | 628E |
| 628E, standard sensor, heated to 100°C | 628E | |
| E27E, etch sensor, heated to 45°C | E27E | |
| E28E, etch sensor, heated to 100°C | E28E | |
| | | |

Pressure Range, Full Scale

| | | |
|--------------------------------------|----|----|
| 0.1 | .1 | 11 |
| 0.25 | RE | |
| 1 | 01 | |
| 2 | 02 | |
| 10 | 11 | |
| 20 | 21 | |
| 100 | 12 | |
| 500 | 52 | |
| 1000 (not available on E27E or E28E) | 13 | |

Engineering Units

| | | |
|------------|---|---|
| Torr/mm Hg | T | T |
| mbar | M | |
| kPa | K | |
| Pascal | L | |

Fittings

| | | |
|-------------------------------|----|----|
| Straight 0.50" (12mm) OD tube | BA | GA |
| 8 VCR female | CE | |
| 8 VCR male | CF | |
| 8 VCR female, short tube | CR | |
| NW16-KF | GA | |
| NW25-KF | GC | |
| 8 VCO female | DA | |
| Mini-CF rotatable | HA | |

Accuracy

| | | |
|--|---|---|
| 0.10% Reading (see specifications for applicability) | C | C |
| 0.15% Reading (see specifications for applicability) | D | |
| 0.25% Reading (see specifications for applicability) | E | |
| 0.50% Reading (see specifications for applicability) | F | |

Options

| | | |
|------------------------|---|---|
| Vertical calibration | 1 | 1 |
| Horizontal calibration | 5 | |

Analog Electrical Connector

| | | |
|------------------------------------|---|---|
| 15-pin D-subminiature, thread lock | B | B |
| 15-pin D-subminiature, slide lock | P | |
| 9-pin D-subminiature, thread lock | A | |
| 9-pin D-subminiature, slide lock | Z | |

Digital Electrical Connector

| | | |
|---------------------------------|---|---|
| Ethernet RJ45 jack, diagnostics | 1 | 1 |
|---------------------------------|---|---|



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